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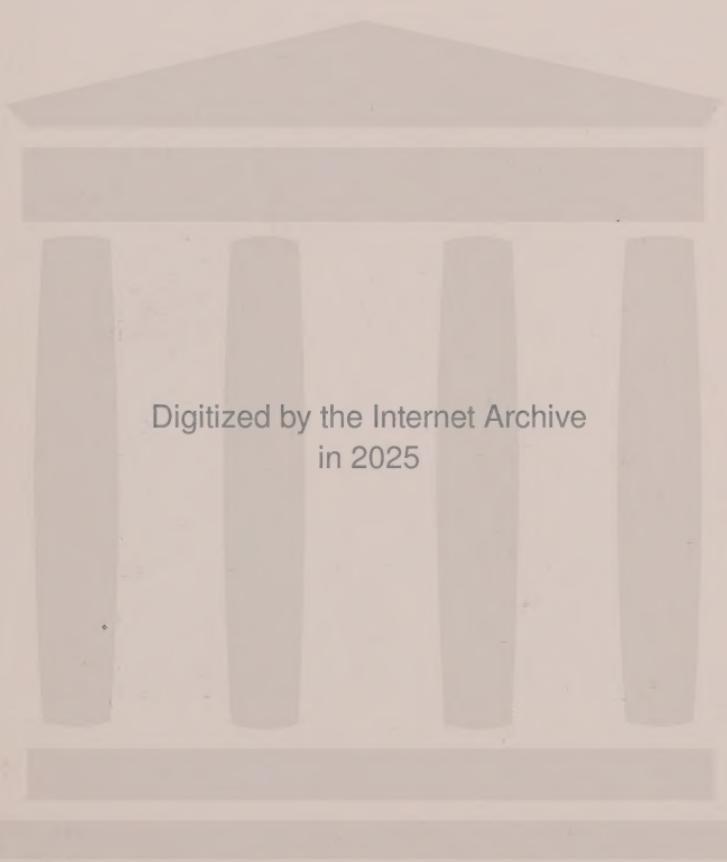
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## NORTH AMERICAN SPECIES OF MARASMIUS.

A. P. MORGAN.

### MARASMIUS FRIES. GEN. HYM. 1836.

*Fungi tough and flexible, drying up and more or less persistent, not putrescent, reviving when moistened. Hymenophore continuous with the stipe but heterogenous, descending into the trama; veil none. Stipe cartilaginous or horny. Lamellae tough and flexible, subdistant, the edge acute and entire; spores white.*

Agarics small or minute, growing for the most part upon wood or among the old leaves in woods; they are easily dried in good shape and make elegant specimens for the herbarium. The species are numerous, especially abounding in the forests of tropical regions. Saccardo in the several volumes of the *Sylloge* enumerates and describes more than five hundred species.

The following is an attempt at an orderly arrangement of the species thus far enumerated in North America including the West India Islands. It is only an endeavor to get together the scattered species so that some critical study of them may be made; hence the descriptions of the different authors are given as written and there is no indication of the synonyms which undoubtedly occur to some extent.

§ 1. *COLLYBIA*.—*PILEUS TOUGH-FLESHY AT LENGTH SUBCORIACEOUS, COMMONLY SULCATE OR RUGULOSE, THE Margin AT FIRST INVOLUTE. STIPE SUBCARTILAGINOUS. LAMELLAE ADNATE OR NEARLY FREE.*

I. SCORTEI. *Stipe solid or medullate-stuffed, then hollow, fibrous within, externally a detersile villosity clothing the cartilaginous cuticle. Lamellae seceding-free.*

A. *STIPE WOOLLY OR STRIGOSE AT THE BASE.*

a. *Lamellae subdistant.*

1. MARASMIUS URENS FRIES. HYM. EUR., *Agaricus urens* Bulliard, Herb, 1790.

Taste acrid. Pileus fleshy then coriaceous, convex-explanate, glabrous, even, at length wrinkled or rivulose. Stipe fibrous, solid, rigid, pallescent, mealy with white flocci and white-villous at the base. Lamellae free, joined together behind, pale or yellowish changing to brownish, at length remote, distant, firm; spores elliptic-oblong,  $8 \times 4$  mic.

Growing among old leaves in woods. Pileus 3-5 cm. in diameter, alutaceous to reddish-umber, paler when dry; stipe 9-12 cm. long, 3-4 mm. thick.

2. MARASMIUS SUBNUDUS ELLIS. PECK, 51. N. Y. REP. 1897.

Taste bitter. Pileus submembranaceous, broadly convex or nearly plane, glabrous, the margin striate. Stipe solid, equal reddish-brown above, darker below, everywhere clothed with a grayish down or tomentum, which is denser near the base. Lamellae narrow, subdistant, nearly free, whitish or cream color.

Growing on old leaves and sticks in woods. Pileus 2-4 cm. in diameter, dull brownish-red or dingy bay; stipe 4-8 cm. long, 2-3 mm. thick.

3. MARASMIUS COPELANDI PECK. BULL. TORR. BOT. CLUB. 1904.

Taste and odor strong and unpleasant. Pileus thin, soft, broadly convex, glabrous, tawny. Stipe slender, soft, hollow, downwardly velvety-pubescent. Lamellae few, unequal, distant, adnate, pallid; spores subfuscoid, more acute at one apex,  $12-15 \times 4$  mic.

On dead leaves of *Quercus densiflora*; California. Pileus 1-2 cm. broad; the stipe 4-6 cm. long, 1-2 mm. thick.

4. MARASMIUS SCABELLUS. AGARICUS SCABELLUS A. & S. CONSP. FUNG. 1805. *Agaricus stipitarius* FRIES, SYST. MYC. I. 1821.

Pileus a little fleshy, convex-plane, umbilicate, velvety-scaly or brown-fibrillose. Stipe stuffed becoming fistulose, tough, brownish, hirsute-fibrillose. Lamellae seceding-free, ventricose, subdistant, white.

Growing on sticks and old leaves in open woods. Pileus 6-10 mm. in diameter, the stipe 3-7 cm. long and 1-2 mm. thick. This species of *Collybia* is constantly taken for a *Marasmius*.

5. *MARASMIUS UMBONATUS* PECK 25TH N. Y. REP.  
1872.

Pileus thin, tough, expanded, umbonate, glabrous, even or substriate, alutaceous. Stipe solid, equal, tawny below, paler above, velvety-tomentose. Lamellae narrow, subdistant, reaching the stipe, venose, connected, sometimes branched, white.

Growing on the ground under balsam trees. Pileus 1-2 cm. in diameter; the stipe 2.5-4.0 cm. in length and 1 mm. thick.

6. *MARASMIUS ACERINUS* PECK, N. Y. REP. 1898.

Pileus thin, submembranaceous, convex, umbilicate, subglabrous, sulcate-striate, pale bay red. Stipe short, often curved, hollow, clothed with minute whitish pubescence, colored like the pileus or sometimes a little darker. Lamellae broad, distant, adnate, white or yellowish; spores subelliptic,  $7-8 \times 4$  mic., obliquely apiculate at one end.

Growing on old bark of *Acer spicatum*. Pileus 6-12 mm. broad; the stipe 1-2 cm. long, 1-2 mm. thick. The stipe is thinly clothed with minute short whitish hairs, which appear to some extent on the pileus.

7. *MARASMIUS VITICOLA* B. & C. ANN. & MAG. N. H.  
OCT. 1859.

Pileus thin, subcoriaceous, depressed, sulcate-striate, pale rufous. Stipe short, dark brown, pruinose-furfuraceous. Lamellae ventricose, moderately broad, slightly adnate, distant, pallid, the interstices even.

Growing on dead vine branches; Alabama. Pileus 2 cm. in diameter; the stipe 2.5 cm. in height.

b. *Lamellae rather close.*8. *MARASMIUS SPONGIOSUS* B. & C. JOURN. BOT.  
1849.

Pileus plane, whitish-brown, the center darker, obtuse. Stipe furfuraceous-pulverulent; the base thickened, spongy, tawny-villous. Lamellae broad, whitish, rather close, slightly adnate; spores elliptic, obliquely apiculate,  $7-9 \times 3-4$  mic.

Growing in rich soil around old stumps, etc. Pileus 1-2 cm. in diameter, the stipe 3-5 cm. long, and 1-2 cm. thick above the rooting base, sometimes much thicker.

9. *MARASMIUS RIGIDUS* MONTAGNE SYLL. CRYPT.  
1856.

Pileus a little fleshy, convex, umbonate then explanate, at length cyathiform-reflexed, glabrous, purplish, brown when dry, the margin striate. Stipe cartilaginous, bay, fistulous, everywhere clothed by a pale vinosity, the base thickened and spongy-floccose. Lamellae close, narrow, attenuate-attached behind, white, pale cervine when dry.

Growing on old wood and fallen leaves of Oak. Pileus 2 cm. in diameter, the stipe 5 cm. long and 1-2 mm. thick. The "globose" spores are negligible.

10. MARASMIUS PERONATUS FRIES. HYM. EUR., *Agaricus peronatus* BOLTON FUNG. 1788.

Taste acrid. Pileus convex or nearly plane, fleshy-membranaceous, reddish-pubescent; rugulose. Stipe fibrous stuffed, subtomentose, downward yellow-strigose. Lamellae rather broad, rufescent or pallid, seceding-free; spores elliptic ovoid, hyaline,  $10 \times 6-7$  mic.

Growing among old leaves in woods. Pileus 2-4 cm. in diameter, the stipe 5-7 cm. long, 3-4 mm thick. The dense yellow strigae at the base of the stipe appear to constitute the distinguishing character.

11. MARASMIUS SULPHUREUS JOHNSON, BULL. MINN. ACAD. 1878.

Pileus red-brown, expanded, the margin wrinkled, the umbo darker colored. Stipe sulphur-colored, tomentose, equal, fistulous, incurved, bulbous at the base. Lamellae numerous, entire dimidiate, adnate, subdecurrent, venose-connected, pale orange.

12. MARASMIUS LANATUS, *Agaricus lanatus* SCHUMACHER, EN. PLANT. 1803.

Pileus fleshy-membranaceous, subhemisphaeric, bay, the margin brownish. Stipe rather short, subclavate, dilute umber, fleshy fibrous, whitish-woolly at the base. Lamellae rather broad, behind subrotundate, to the apex of the stipe dilated-adnate, umber-brown, the margin paler.

Growing among the fallen leaves in Beech woods. Pileus 4-5 cm. in diameter, the stipe 5-6 cm. long and nearly 4 mm. thick.

13. MARASMIUS FAGINEUS MORGAN, MYC. FLORA M. V.

Pileus a little fleshy, convex then plane or depressed, at length somewhat repand, rugose-striate. Stipe short, hollow, pubescent, thickened upward, the base somewhat tuberculous. Lamellae short-adnate, somewhat crisped, close, pale reddish.

Growing over the bark at the base of living beech trees. Pileus 2-4 cm. in diameter, the stipe 1-3 cm. long. Pileus reddish-pallid or alutaceous, the stipe concolorous, the lamellae rather paler.

14. MARASMIUS BIFORMIS PECK, N. Y. REP. 1902.

Pileus thin submembranaceous, campanulate or nearly plane, generally umbilicate, glabrous, bay-red or pale brown, rugosely striate. Stipe slender, stuffed or hollow, clothed with a dense

pubescence. Lamellae rather close, adnate, grayish tinged with creamy-yellow.

Growing on the ground among the leaves of coniferous woods. Pileus 8-16 mm. in diameter, the stipe about 25 mm. long and 1 mm. thick.

B. *STIPE NAKED AT THE BASE OFTEN COMPOSED OF TWISTED FIBRES.*

15. *MARASMIUS OREADES* FRIES HYM. EUR. AGARICUS OREADES BOLTON FUNG. 1788

Somewhat fragrant. Pileus fleshy, tough, convex, then plane, subumbonate, glabrous expallent. Stipe solid, equal, corticate by a villose interwoven cuticle, pallid, the base naked. Lamellae free, broad, distant, whitish; spores elliptic, hyaline, 7-9 x 4-6 mic.

Growing in grassy places in open woods, pastures, etc. Pileus 3-5 cm. in diameter, the stipe 6-9 cm. in length and 3-4 mm. thick.

16. *MARASMIUS PLANCUS* FRIES HYM. EUR.

Taste mild. Pileus fleshy-tough, plano-depressed, obtuse, even, expallent. Stipe hollow, soon compressed, with a cortex of white hairs, the bast tapering somewhat and naked. Lamellae seceding free, distant, linear, darker-colored.

Growing in woods and shady places. Pileus 2-3 cm. in diameter, the stipe 4-5 cm. long. Closely related to *M. oreades*.

17. *MARASMIUS FIBROSIPES* B. & C. FUNGI CUB. No. 89. 1867.

Pileus depressed, subcoriaceous, thin, glabrous, whitish. Stipe rather thick, fibrous-scaly, solid, white, fuscous. Lamellae close, narrow, free, rounded behind and remote.

Growing on dead wood. Pileus 3-4 cm. in diameter, the stipe 2-3 cm. long and 3-4 mm. thick.

18. *MARASMIUS STRIATIPES* PECK 24 N. Y. REP. 1871.

Pileus convex, glabrous, even, pale alutaceous. Stipe equal or slightly thickened at the base, firm, hollow, distinctly striate, pruinose-tomentose, whitish with an abundant white mycelium. Lamellae rather broad, subdistant, rounded behind, attached, white.

Growing on the ground among old leaves in woods. Pileus 4-5 cm. in diameter, the stipe 5-10 cm. high and 4-6 mm. thick

II. *TERGINI. Stipe rotting, definitely tubular, not fibrous but manifestly cartilaginous. Lamellae seceding-free. Pileus thinner than those of the former, hygrophanous.*

A. *STIPE WOOLLY BELOW OR AT THE BASE,  
GLABROUS ABOVE.*

a. *Pileus even or only rugulose.*

19. MARASMIUS FUSCO-PURPUREUS FRIES HYM.  
EUR. AGARICUS FUSCO-PURPUREUS PERSOON ICONES 1799.

Inodorous. Pileus a little fleshy, convexo-plane, somewhat umbilicate, dark purple, expallent. Stipe fistulous, glabrous, dark purple, the base reddish-strigose. Lamellae annulate-attached, at length free, distant, rufescent; spores  $8-10 \times 4$  mic.

Growing among old leaves in beech woods. Pileus 2-3 cm. in diameter, the stipe 5-8 cm. long and 3-4 thick.

20. MARASMIUS PRASIOSMUS FRIES HYM. EUR.

Strong-smelling. Pileus submembranaceous, tough, campanulate-convex, then explanate, obtuse rugulose. Stipe fistulous, pallid above, glabrate, thickened downward, pallid then rufous or fuscous, subtomentose. Lamellae attached, rather close, white; spores elliptic-ovoid, hyaline,  $14-15 \times 7$  mic.

Growing upon the old leaves in oak woods. Pileus 1-2 cm. in diameter, the stipe 5-8 cm. long and 2 cm. thick. Odor strong and persistent. Pileus whitish darkened on the disk.

21. MARASMIUS DELECTANS MORGAN SP. NOV.

Pileus subcoriaceous, convex then expanded and depressed glabrous, rugulose, white changing in drying to pale alutaceous. Stipe long, slender, tapering slightly upward, glabrous, brown and shining, white at the apex, arising from an abundant white-floccose mycelium. Lamellae moderately broad, unequal, rather distant, trabeculate between, white emarginate adnexed; spores lance-oblong, hyaline,  $7-9 \times 4$  mic.

Growing on old leaves in deciduous woods. Pileus 1-2 cm. in diameter, the stipe 3-5 cm. long and 1.0-1.5 mm. thick.

22. MARASMIUS SEMIHIRTIPIES PECK 25 N. Y.  
REP. 1872.

Pileus thin, tough, nearly plane or depressed, glabrous, sometimes striate on the margin, reddish-brown, becoming alutaceous, the disk sometimes darker. Stipe equal, even or finely striate, tubular, glabrous above, velvety-tomentose toward the base, reddish-brown. Lamellae subdistant, reaching the stipe, white.

Growing on the ground among fallen twigs and leaves. Pileus 1-2 cm. in diameter, the stipe 3-5 cm. long and 1 mm. thick.

b. *Pileus striate or plicate-sulcate.*

23. MARASMIUS SEMISQUARROSUS B. & COOKE,  
GREVILLEA VI, 129. Pileus a little fleshy, convex then plane, obtuse, whitish, the margin striate. Stipe tubular, bay brown, glabrous above and substriate, below floccose-squarrose and slightly thickened. Lamellae adnexed, rather close, whitish.

Growing among fallen leaves. Pileus 1-2 cm. in diameter, the stipe 5-8 cm. long, squarrose one-third the distance from the base.

24. *MARASMIUS BOMBYCIRHIZA* B. & COOKE, GREVILLEA VI, 129.

Pileus membranaceous, somewhat convex, pallid, the margin striate. Stipe fistulous, whitish, glabrous above, below elongated, rooting, white, floccose. Lamellae adnate, white.

Growing on fallen cones of *Magnolia grandiflora*. Pileus 6-8 mm. in diameter, the stipe 5-8 cm. long, of which the lower half is rooting and clad with white cottony fibrils.

25. *MARASMIUS PLICATULUS* PECK BULL. TORR. BOT. CLUB. 1897.

Pileus submembranous, convex or subcampanulate, glabrous, usually sulcate-striate, pale brown or vinous red. Stipe slender, tubular, glabrous above, shining, blackish-brown, red at the apex, the base covered with abundant whitish hairs or down. Lamellae subdistant, narrowed behind, attached, whitish, spores elliptic-ovoid, hyaline, 10-13 x 5-7 mic.

Growing among fallen leaves; California. Pileus 2-3 cm. in diameter, the stipe 7-13 cm. long and about 3 mm. thick.

26. *MARASMIUS BELLIPES* MORGAN SP. NOV.

Pileus thin, a little fleshy, campanulate then expanded, glabrous, plicate-sulcate, pale pinkish to purplish. Stipe long, slender, thicker upward, glabrous, brown and shining below, the summit purplish, arising from an abundant white mycelium. Lamellae moderately broad, equal, rather distant, white, approximate; spores lanceolate, hyaline, 10-12 x 3-4 mic.

Growing on old leaves of deciduous trees. Pileus 1.5-2.5 cm. in diameter, the stipe 4-6 cm. long and 1 mm. thick.

B. *STIPE, AT LEAST WHEN DRY, EVERYWHERE PRUINATE-VELVETY.*

a. *Pileus even or only rugulose.*

27. *MARASMIUS ERYTHROPUS* FRIES HYM. EUR. ICONES T. 174. AGARICUS ERYTHROPUS PERSOON SYNOPSIS 1801.

Inodorous. Pileus a little fleshy, convexo-plane, obtuse, even, pallescent, afterward rugose. Stipe fistulous, striate, glabrous, dark reddish, by dryness subpruinose, the base white-strigose. Lamellae seceding-free, broad, lax, venose-connected entire, whitish; spores lanceolate, 7-9 x 3-4 mic.

In beech woods among the old leaves and on the trunks. Pileus 2-3 cm. in diameter, the stipe 5-8 cm. long and 2-3 mm. thick.

28. *MARASMIUS SULLIVANTII* MONT. SYLL. CRYPT.  
446.

Pileus fleshy-membranaceous, convex, saffron-red, the disk even and subumbilicate, the margin striatulate. Stipe cartilaginous, fistulous, equal, brown, pruinose, beneath the pruina shining, the base scantily white-strigose. Lamellae free, rather thick, unequal, white or pallid; spores white, spheric (?) 10 mic. in diameter.

Growing on the ground among mosses. Pileus 2 cm. in diameter.

29. *MARASMIUS ARCHYROPUS* FRIES HYM. EUR.  
*AGARICUS ARCHYROPUS* PERSOON MYC. EUR. 1828.

Inodorous. Pileus a little fleshy, convex then plane or depressed, glabrous, pallescent. Stipe stuffed becoming hollow, rigid, straight, beneath the white tomentose down pale rufescent. Lamellae attached seceding close, linear, pallid; spores 8-10 x 3-4 mic.

Fasciculate-caespitose, growing among old oak leaves. Pileus 2.5 cm. in diameter the stipe 8-10 cm. long and about 2 mm. thick.

30. *MARASMIUS ANOMALUS* PECK 24 N. Y. REP.  
1871.

Pileus thin, convex, glabrous, reddish-gray. Stipe equal, hollow, glabrous or slightly pruinose, pallid, reddish-brown at the base. Lamellae close, narrow, rounded behind and united together, free, whitish or pallid.

Growing on sticks among leaves in woods. Pileus 1-2.5 cm. in diameter, the stipe 3-5 cm. in height, 2 mm. thick.

31. *MARASMIUS SUBTOMENTOSUS* PECK, BULL.  
TORR. BOT. CLUB. 1895.

Pileus thin, subcampanulate, at length convex or nearly plane, minutely tomentose-pubescent, gray or reddish, the margin scarcely striate. Stipe nearly equal, silky-tomentose, grayish or brownish. Lamellae broad, subdistant, free or scarcely attached, ventricose, concolorous; spores 10-13 x 5-7 mic.

Growing on the roots of grasses in sandy places; Kansas. Pileus 1-2 cm. in diameter, the stipe 2-2.5 cm. long and 2 mm. thick.

32. *MARASMIUS POLYPHYLLUS* PECK 51 N. Y.  
REP. 1897.

Odor and taste alliaceous. Pileus fleshy, thin, convex or nearly plane, even, whitish to pale reddish, often darker on the disk. Stipe equal, hollow, reddish-brown, clothed with a whitish down or tomentum, which is commonly more abundant toward the base. Lamellae very numerous, narrow, crowded, adnexed or almost free, white; spores minute elliptic, 5-6 x 3-4 mic.

Growing on damp ground in shaded places. Pileus 3-5 cm. in diameter, the stipe 4-8 cm. long and 2-4 mm. thick.

*b. Pileus striate or plicate-sulcate.*

33. MARASMIUS BADIUS B. & C. FUNGI CUB, 92.

Pileus convex, striate, glabrous. Stipe thickened above and below, pruinose, glabrescent. Lamellae ventricose, distant, rounded behind and slightly adnate, thick.

Growing on bark amongst moss. Pileus 1-2 cm. in diameter, the stipe 2-3 cm. long and 2 mm. thick.

34. MARASMIUS PERSONATUS B. & C. FUNGI CUB.

119.

Pileus depressed, striate, pale, tawny. Stipe rigid, glabrescent, sulcate when dry, attached by an orbicular strigose base, concolorous. Lamellae close, adnexed.

Growing on old leaves. Pileus 6-7 mm. in diameter, the stipe 4 cm. long.

35. MARASMIUS VELUTIPES B. & C. ANN. & MAG. N. H. 1859.

Pileus thin, umbilicate, brown or ochre-brown, the margin striate. Stipe straight, clothed with pale velvety down, ferruginous at the base. Lamellae narrow, close, pallid, attached.

Growing on old leaves in dried up places in swamps. The pileus 1-2 cm. in diameter, the stipe 4-5 cm. long and 2 mm. thick.

36. MARASMIUS SUBPILOSUS PECK, BULL. TORR. BOT. CLUB, 1903.

Pileus thin, even or the center rugulose and the margin striate, pruinose-pubescent, convex or nearly plane, whitish, the center often brown tinged with yellow. Stipe slender, stuffed or hollow, pruinose-pubescent, the base gray-tomentose, reddish-brown, white above. Lamellae rather broad, ventricose, adnate, sub-sinuate, white, the edge minutely ciliate.

Growing among leaves and branchlets in wet woods; Idaho. Pileus 1-2 cm. in diameter, the stipe 3-5 cm. long and 1 mm. thick.

37. MARASMIUS PAPILLOSUS CLEMENTS, BOT. SURVEY IV. 1896.

Pileus conic-papillate, then campanulate or explanate, membranaceous, striate, glabrous, whitish or ochraceous. Stipe equal, whitish, pruinose above, below densely woolly. Lamellae few, attached, white; spores ellipsoid, 6 x 4 mic.

Growing on rotten wood. Pileus 7-15 mm. in diameter, the stipe 15-25 mm. long and 2 mm. thick.

III. STYLOBATAE. *Pileus convex-involute, then plane and depressed. Stipe cartilaginous without a root, dilated at the*

base into a circular disk or floccose tubercle. Lamellae adnate. Growing on old wood, branchlets, sticks, etc.

A. STIPE GLABROUS.

a. Lamellae colored.

38. MARASMIUS RHYSSOPHYLLUS MONT. B. & C. FUNGI CUB. 1867.

Pileus appressed-fibrous, becoming glabrous, whitish or pale yellow. Stipe concolorous, glabrous, the base strigose. Lamellae distant, yellow, trabeculate between.

Growing on old sticks in thick woods. Pileus 2-3 cm. in diameter, the stipe 2-3 cm. long and 2 mm. thick.

39. MARASMIUS SUBGLOBOSUS B. & C. FUNGI CUB. 1867.

Pileus subglobose or hemispheric, yellow. Stipe glabrous, sulcate, dilated at the base. Lamellae broad, adnate, concolorous.

Growing on sticks in woods. Pileus 3-4 mm. in diameter, the stipe 6-7 mm. long. There is a variety three times as large.

40. MARASMIUS CUCULLATUS ELLIS, BULL. TORR. BOT. CLUB. 1876.

Pileus thin campanulate, the margin sulcate-striate. Stipe slender, the base thinly clad by a whitish tomentum, otherwise pale straw-color. Lamellae few, distant, unequal, adnate, paler than the pileus.

Growing on dead branches of Vaccinium. Pileus about 3 cm. in diameter, the stipe 5-10 mm. long.

41. MARASMIUS CORRUGATUS PAT. SACCARDO, SYLOGE XVI, 54.

Pileus fleshy-membranaceous, convex, glabrous, brown, the disk rugulose, the margin even. Stipe cylindric, rufous-black, paler above, the base dilated. Lamellae crowded, unequal, tawny, adnate.

Growing on rotten wood. Pileus 1-2 cm. in diameter, the stipe 2-3 cm. long and 1 mm. thick.

b. Lamellae white or pallid.

42. MARASMIUS STYLOBATES B. & C. FUNGI CUB. No. 109, 1867.

Wholly white. Pileus thin, glabrous, convex then plane, the margin sulcate. Stipe hollow, glabrous, arising from an orbicular base. Lamellae broad, distant, free.

Growing on rotten wood. Pileus about 4 mm. in diameter, the stipe 1-2 cm. long.

43. MARASMIUS COILOBASIS BERK., JOURN. BOT 1856.

Wholly white. Pileus convex, membranaceous. Stipe gla-

brous arising from an orbicular disk. Lamellae narrow, linear, the spaces between venose.

Growing on dead trunks. Pileus 2-3 cm. in diameter, the stipe 2-3 cm. long, scarcely 1 mm. thick.

44. *MARASMIUS CATERVATUS* MASSEE, Journ. Bot. 1892.

Pileus membranaceous, convex or campanulate then expanded, even, becoming striate, whitish. Stipe fistulous, equal, white, glabrous, the base mycelio-thickened. Lamellae adnate, distant, white then pallid; spores ellipsoid,  $6 \times 4$  mic.

Growing on dead wood; West Indies. Pileus about 8 mm. in diameter, the stipe 12-16 mm. long and 1 mm. thick.

B. *STIPE VELVETY OR PRUINOSE.*

a. *Lamellae colored.*

45. *MARASMIUS SERICIPES* B. & C. FUNGI CUB. 96.

Vinoso-rufous when dry. Pileus convex, thin rugose. Stipe rather thick, silky, glabrescent. Lamellae distant, narrow adnate.

Growing on dead sticks in woods. Pileus 2 cm. in diameter, the stipe 2-3 cm. long and 2-4 mm. thick.

46. *MARASMIUS DICHROUS* B. & C. ANN. & MAG. N. H. XII. 426.

Pileus convex, dark brown, minutely tomentose, sometimes appearing velvety. Stipe brown; furfuraceous, villous-enlarged at the base. Lamellae moderately distant, ventricose adnate-seceding; interstices nearly even; spores white.

Growing on rotten wood in dry swamps. Pileus 2-3 cm. in diameter, the stipe 3-4 cm. long and scarcely 2 mm. thick.

b. *Lamellae white or pallid.*

47. *MARASMIUS RUGULOSUS* B. & C. FUNGI CUB. 1867.

Pileus hemispheric, multi-sulcate, glabrous, brown or blackish, the umbo depressed and darker. Stipe brown or blackish, sparsely pubescent. Lamellae adnate, ventricose, whitish.

Growing on sticks and leaves. Allied to *M. foetidus*.

48. *MARASMIUS RAMEALIS* FRIES. Hym. Eur. *Agaricus ramealis*. BULLIARD HERB. 1786.

Pileus a little fleshy, plane or depressed, obtuse, not striate, rugulose, opaque. Stipe stuffed, short, farinaceous, white, downward rufescent. Lamellae adnate, subdistant, narrow, white; spores elliptic,  $4 \times 2$  mic.

Growing on dry branches of *Quercus*, *Fagus*, *Rubus*, etc., often densely gregarious. Pileus 5-8 mm. in diameter, the stipe 6-10 mm. long and about 1 mm. thick. Pileus white, the disk subrufescent. In its young state the base dilated into a circular disk.

49. MARASMIUS PRAEACUTUS ELLIS, BULL. TORR. BOT. CLUB. 1876.

Very minutely pulverulent. Pileus membranaceous, convex then explanate, sub-umbilicate, faintly sulcate-striate, white, the disk rufescent. Stipe stuffed then hollow, reddish-brown, the base whitish. Lamellae close, white, rather narrow, unequal, some of them forked, adnate.

Growing on dead trunks of Citrus and Alnus. Pileus 6-7 mm. in diameter, the stipe 2-3 cm. long.

50. MARASMIUS CANDIDUS FRIES. HYM. EUR. *Agaricus candidus*. BOLTON FUNG.

All white. Pileus submembranaceous, hemispheric then plane and depressed, pellucid, naked, at length salcate rugulose. Stipe stuffed, slender, incurved, slightly pruinose, at the base flocose and at length brownish. Lamellae adnexed, ventricose, distant, spores elliptic,  $4 \times 2$  mic.

Growing on sticks, branches, needles of Pine, etc. Pileus 4-8 mm. in diameter, the stipe 6-10 mm. long and about 1 mm. thick.

51. MARASMIUS CONCINNUS E. & E. PROC. AC. NAT. SC. 1893.

Pileus convex, smoky-brown, pruinose. Stipe white, arising caespitously from a white tomentum, below hairy-strigose, tapering upward and pruinose-pubescent. Lamellae not close, adnate, pruinose, the edge obtuse; spores globose, hyaline 3 mic. in diameter.

Growing on dead wood of Euonymus. A minute species; the pileus 1 mm. in diameter, the stipe 2 mm. long.

(To be continued.)

## THE AMANITAS OF SWEDEN.

H. C. BEARDSLEE.

During the past summer it was the privilege of the writer to spend two months in the vicinity of Stockholm, studying the fungous flora of that region. The following notes are intended to outline some of the impressions of an American mycologist, gained from a study of the Amanitas with which Fries and his associates were familiar, with the hope that they may prove to be of interest to other American students of this genus, and serve as a slight contribution to a correct understanding of our own species.

The Amanitas which were observed included nine species, viz.: *A. verna*, *muscaria*, *pauherina*, *spissa*, *rubescens*, *porphyria*, *mappa*, *strangulata*, and *vaginata*. *A. muscaria* and *rubescens* and *Amanitopsis vaginalis* need little comment.

## AMANITA MUSCARIA.

*A. muscaria*, it may be said, was found occurring in two distinct forms. The common and typical form is much more brilliant than the plant commonly found in America. It is large and robust, with the pileus as much as ten inches in diameter, and is at first a brilliant red, not orange, with which the white warts of the pileus contrast finely. In this form it seemed to me the most striking and beautiful of the fungi observed. In Maine I have collected specimens with colors nearly as bright and stature fully as large, but for the most part our American plant seems to tend more to orange or yellow than to red, and is much less striking in appearance. The other Swedish form is very modest in its coloration, being umber or even gray, but differs in no other way from the type. The spores were as in our American plant.

## AMANITA RUBESCENS.

*A. rubescens* Pers. was our familiar friend in color, stature, habit, and spores, and was as abundant as it is on Long Island, while *Amanitopsis vaginata* Bull. was identical with our plant and presented the same variations in color and stature.

## AMANITA STRANGULATA AND VAGINATA.

Of the remaining species several were of great interest, and were observed with great care through the summer. The first of these to appear was *A. strangulata* Fr. I had felt very anxious to find this species, and as it happened, was well located to observe it, as one island in the Park at Drottingholm where we were located seemed to be a peculiarly favorable station, where it could be seen in large numbers throughout the summer. The status of this species has been doubtful to American students for several reasons. Fries himself, evidently did not have a clear conception of it when he wrote the first edition of his *Épicerisis*, for he placed it with *A. solitaria*, described it as having a thin pileus, a circumscissile free volva, and an entire distant annulus. He stated also that it is plainly analogous to *A. verna*, and that he had observed only one plant, growing on an ant hill. Later he seems to describe an entirely different plant, placing it in *Amanitopsis* and comparing it with *A. vaginata*, from which he makes it differ in its larger size, its warty pileus, and in the character of its volva and annulus. He gives also a very good figure in the main.

As we observed the plant it corresponds well to Fries' later description, and to his figure. At Drottingholm it is a very robust plant, easily exceeding all the other species in size. One specimen was observed which had the pileus 12 in. in diameter, the stipe nearly fourteen inches high and two inches thick. From these dimensions it varied all the way to the size of our forms of *A. vaginata*. In the park it was very conspicuous, the huge pilei,

held aloft above the grass, were visible for a considerable distance, making it easily the most striking of the fungi observed.

The doubt which has existed in the United States in regard to this species has rested largely upon three things. Fries' figure seems to indicate a stipe with a curious enlargement or in some cases two enlargements near the base. His references to a "false annulus" have been difficult to understand, and doubt has also existed in regard to the character of the spores.

Continued observation made it clear what was meant by both the figure and description.

In his description he speaks of its having a false annulus "resembling the false annulus of *A. vaginata*, but not like it enclosed in the volva." Those who have examined *A. vaginata* closely will be able to understand this reference. In this species the stipe is often clothed with a soft flocculose coat, and if such plants are examined in their early stages, just as the pileus is breaking through the volva, it will be found that within the volva there is a curious raised zone where the pileus clasped the stipe, reminding one somewhat of the annulus of *Coprinus atramentarius*. This seems to be particularly marked in rainy weather. This enlargement soon disappears and is not always to be found. Those who have observed this feature of *A. vaginata* will readily understand the meaning of Fries' figure and description. The enlargements figured at the base of the stipe in *A. strangulata* are not enlargements of the stipe proper, but are rather, poor representations of the "false annulus." They may be observed in *A. strangulata* at times, though seldom in the perfection of the figure. In fact they seem to be rather accidental, than essential. In the study of the American plant little weight need therefore be given to this particular feature of Fries' plant. The spores were found to be globose 12 x 14 mic. in diameter.

There seemed little doubt after continued study of the Swedish plant that the forms found by Peck in New York and by the writer in West Virginia and referred to *A. strangulata* Fr. have been correctly referred. The American plant seems to be less robust than its Swedish relatives, but it does not differ in any essential point.

*Amanitopsis strangulata* is certainly close to *A. vaginata*, but it seems to be sufficiently distinct to be entitled to recognition. It is at least better marked than many recognized species.

#### AMANITA SPISSA.

*Amanita spissa* Fr. is different from anything I have observed in America. It is much like *A. rubescens* in its stature and color, and has the pileus covered with the closely attached fragments of the volva, and the solid stipe somewhat marginate bulbous. Cooke's figure is fairly good. It does not have the characteristic

red stains of *A. rubescens* which at once distinguishes it from that species. The spores were found to be 10-12 by 7-8 mic.

#### AMANITA PORPHYRIA.

*A. porphyria* Fr. is close in appearance to forms of *A. phalloides*, and would be referred to that species unless closely examined. The annulus is however a peculiar sooty gray externally and in collapsing forms a fuliginous ring on the stipe which is the most characteristic mark of the species. It was found in dense pine woods, and was rather common.

#### AMANITA MAPPA.

*A. mappa* Fr. is a late species and was found but once, the last week in August. It is said to be more common late in the fall. It is identical with the American plant as it occurs at Asheville, so that no doubt need be entertained as to its occurrence with us. The stipe is strongly bulbous and the thick volva breaks in a regular circumscissile manner, leaving a thick sheath on the base of the bulb with a strongly marked margin much as in *A. pantherina*, and forming thick felty warts on the pileus. The plants observed were all pale lemon yellow. The spores were 9-11 mic. and globose in form. Karsten speaks of them as rough, and the roughness may easily be demonstrated with a good one-fifth inch objective. It is worth noting, however, that this feature is not confined to this one species, for although it does not seem to have been commonly noticed, several species of the *Amanita* have spores which are distinctly spinulose.

#### AMANITA PANTHERINA.

*A. pantherina* DC. was watched with a great deal of interest. It is very common at Drottningholm and, I am told, in Sweden generally. Its closest American relative is *A. cothurnata*, so well figured and described by Atkinson and so abundant in the Southern Appalachians. The typical Swedish plant is very distinct and is recognized at sight. The pileus is brown or gray and its surface contrasts finely with the white warts with which it is covered. The thick persistent sheath formed upon the base of the stipe by the basal portion of the volva makes it easy to recognize.

At first sight *Amanita pantherina* and *A. cothurnata* seem to be certainly distinct, but it must be confessed that with continued observation the validity of our American species seemed very doubtful. The points of difference as they are understood by Bresadola are the smaller size, white color and especially the different spores of *A. cothurnata*. The size of the two species does not impress one who has seen both species growing as being particularly different. The color is different, as our plant is pure white or nearly so in its typical form, which is not true of *A. pantherina*. It may be said, however, that pure white forms of *A. pantherina* were found at Drottningholm several times during the

summer, which had they occurred at Asheville would have been taken for *A. cothurnata* without hesitation. The main difference therefore would seem to be in the spores. These are described in *A. cothurnata* as being globose or nearly so, with a large, oil globule or nucleus which nearly fills the interior of the spore. The spores of *A. pantherina* are elliptical. What has been confidently referred to *A. cothurnata* is very abundant at Asheville. It is in perfect agreement with figure and description except in the spore characters. Numerous examinations have been made during the past four years giving always the same results — an elliptical spore similar in size and measurements to that of *A. pantherina*, without an oil globule of any size. In view of the perfect agreement in other respects the difference in spore characters has been a continual puzzle. Later, in examining anew herbarium specimens, it was found that in these the spores were exactly as described. They were globose or nearly so and the cell contents had almost entirely disappeared, their place being taken by a large globule which almost entirely filled the interior of the spore. In the Asheville plant therefore the spores in the fresh plant are in accord with those of *A. pantherina* and the points of difference are due to secondary changes.

This view would seem the more reasonable when one considers that the presence of a large oil globule to the exclusion of the proper cell contents is abnormal in a spore. A specimen of *A. pantherina* which was kept for several weeks in Sweden and examined at intervals showed also the same change in its spores. Whether such a change in the spores of herbarium specimens of the Agarics often takes place, and whether it always takes place in this species, I am unable to state.

In view of these facts it seems safe to suggest that *A. cothurnata* may well be considered a color form of *A. pantherina*. I believe that this will be accepted by those who examine living specimens of both forms. In this connection it may be of value to suggest also that our *A. spreta* is not distinct from *A. cinerea* Bres. Certain points of similarity led to this belief several years ago and it has been confirmed by Bresadola, to whom specimens and photographs of *A. spreta* have been sent. Bresadola's description does not cover all the forms in which this variable species occurs, nor does his figure well represent it. He states, however, in a letter that his plant is exactly shown in Atkinson's figure of *A. spreta*. In the southern mountains this species is very abundant. During the summer it may be found in profusion in our woods and groves, vieing in abundance with *A. Caesarea*, which is at times our commonest species. Pure white forms are not rare and in stature all conceivable variations may be found. Some compare well with Bresadola's figure, but for the greater part they are much more robust, the extreme forms being very unlike the form which he has considered the type.

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p. v.

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q. v.

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### **EDITOR'S NOTES.**

MUCH belated, and to avoid still greater delay by reason of incomplete copy, this number of the JOURNAL is somewhat abridged from the usual size, but all copy furnished will be taken care of in the future.

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WE begin in this number the publication of Professor Morgan's paper on the North American species of Marasmius, and will resume the same in the next. The all-important work for the American mycologist is to study critically our species of Fungi. In the near future it is hoped that such studies may be found on many pages of the JOURNAL. In fact, such work, of monographic character, and the complete indexing of North American Mycology, are the two most important lines for which the JOURNAL stands. However, the Notes and articles especially prepared in the interest of beginners are much desired. With the co-operation of many competent mycologists this periodical can be a real *Journal of Mycology*.

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A FEW specialists may possibly be discommoded by the charge to which I plead guilty of not keeping *actually up to date* with the Index to North American Mycology. Yet, after all, when insurmountable obstacles are kept in mind, I am **sure** of being but little criticised. My Index is useful to many, to beginners in systematic work, indispensable as a card index in well-regulated libraries; yet, for limited groups, or special purposes, the worker will in many cases of course be under the necessity of making his own peculiar index.